

Appl. No. 09/980,508
Filed: 2 November 2001
Amendment Page 5 of 9

Remarks

The Examiner has rejected claims 1-5 under 35 USC §103(a) as being unpatentable over Kamiguchi (5736079) in view of Stehr (4735080) and Rees (3726625) noting in particular that: Kamiguchi teaches the claimed apparatus with a servomotor but lacking among other things a cam member and cam follower, ejector rods slidably carried by a knockout bar, and a spring between an end of an ejector rod and a knockout bar; Stehr teaches an ejector drive including a cam but lacking disclosure of a specific type of motor; and Rees teaches a slidably movable knockout bar and spring for urging a pusher rod towards the rear for rejecting articles. The Examiner concluded it would have been obvious to one of ordinary skill in the art to have combined the cam and cam follower of Stehr with an electric motor and to modify the apparatus of Stehr with stop members, flange and spring as taught by Rees to limit rearward displacement of the rod. This rejection is traversed. Discussion of this rejection shall be made with reference to the claims as amended hereby.

Kamiguchi *et al.* disclose an ejector drive apparatus having motor driven screws (ball threads 10) engaging nuts (ball nuts 11) to effect linear movement of pusher plate 12. The screw and nut apparatus of Kamiguchi *et al.* effects reciprocation of pusher plate 12 by rotation of the shaft of the drive motor (servomotor M) in forward and reverse directions. In contrast, the drive apparatus of the invention of the subject application effects reciprocation of the knockout bar by rotation of the shaft of the drive motor in only one direction. Nothing in Kamiguchi *et al.* teaches or suggests the use of a cam and cam follower to achieve reciprocation of the knockout bar.

Stehr discloses an ejector mechanism carried on the ram (3) of a press, the ejector mechanism comprising pivotably mounted lever(s) (10) for converting rotation of cam disk(s) (11) to reciprocation of ejector pin(s) (9). Stehr expressly provides that a cam disk is provided for each ejector pin. The cam disk is rotated by a drive motor (25) coupled through gear wheels (29 and 30), eccentric shaft (5), gear linkage assembly (17), bevel gear (20), coupler mechanism (24) and transfer shaft (21). A spring (15) ensures contact between the cam disk and follower. Nothing in Stehr teaches or suggests any arrangement of a knock out bar, ejector rod and ejector plate, the entire linear drive apparatus of the ejector pins disclosed by Stehr consisting of the levers and cam disks. Clearly, Stehr does not teach or suggest that an ejector rod be slidably carried by a knock-out bar for limited relative movement as required by the claims of the subject application.

Appl. No. 09/980,508
Filed: 2 November 2001
Amendment Page 6 of 9

Rees discloses a passive actuator for ejector pins (20) being operated by reciprocation of a movable platen (12) carrying a mold portion (14). The ejector pins are advanced into mold cavities (19) by movement of plate (21) toward the movable platen. The actuator effects movement of the plate by pusher rod (24) operating through an articulated linkage. A spring (24) biases the pusher rod for retraction of the plate away from the movable platen. On retraction of the movable platen, the pusher rod contacts an adjustable stop (35) mounted to the machine frame (15) and advances relative to the movable platen whereby the linkage advances the plate toward the movable platen. Rees teaches that the ejector rods are fixedly secured to the plate (column 2, lines 18 - 21). Contrary to the invention of the subject application, Rees teaches against having the ejector rods be slidably carried by a knock-out bar for limited relative movement as required by the claims of the subject application.

As noted herein, nothing in Kamiguchi *et al.* teaches or suggests the use of a cam and cam follower to achieve reciprocation of the knockout bar of an ejector apparatus. Nothing in Kamiguchi *et al.* teaches or suggests any combination of the servomotor control for plural cycles of reciprocating motion of short amplitude with a cam drive as disclosed by Stehr. Nor does Stehr teach or suggest use of the cam drive to achieve reciprocating motion of short amplitude of the ejector pins. Hence, it is submitted that the combination of Kamiguchi *et al.* and Stehr suggested by the Examiner is improper, there being no basis in either reference to suggest any combination of the teachings of each. Further, as the ejector apparatus of Rees does not rely on a drive motor of any kind, there is no teaching or suggestion in Rees for combination with a servomotor control such as disclosed by Kamiguchi *et al.* or the motor driven cam apparatus of Stehr. Nor do Kamiguchi *et al.* or Stehr teach or suggest any apparatus for application to the passive mechanism of Rees. Hence, it is submitted that the suggested combination of Kamiguchi *et al.*, Stehr and Rees is improper as the references provide no suggestion for such combination.

In accordance with the present invention as now claimed, ejector rods are slidably supported by the knock-out bar for limited relative movement and a spring is compressed by over-travel of the knock-out bar relative to the ejector plate. Hence, the present invention accommodates a difference between the distance moved by the ejector plate and the distance moved by the knock-out bar so that the fully retracted position of the knock-out bar need not be precisely aligned relative to the fully retracted position of the ejector plate. Nothing in the cited references teaches or suggests any arrangement of an ejector plate and knock-out bar

Appl. No. 09/980,508
Filed: 2 November 2001
Amendment Page 7 of 9

wherein the knock-out bar is movable relative to the ejector plate. It is submitted that claims 1 – 5 patentably distinguish over the cited references.

The Examiner has rejected claims 6 and 12 under 35 USC §103(a) as being unpatentable over Kamiguchi (5736079) in view of Stehr (4735080) and Rees (3726625) as applied to claims 1 – 5 and further in view of Rahn *et al.* (5067892) and Sharman (3680998) noting in particular that: Kamiguchi, Stehr and Rees fail to teach among other things, a cam track offset from the axis of the drive shaft and a motor driving a pulley including a one way clutch coupled with an ejector drive system; Rahn *et al.* teaches a cam track that is offset from the axis of the drive shaft; and Sharman teaches an electric motor that connects to a pulley and clutch. The Examiner concluded that it would have been obvious to one of ordinary skill in the art to have changed Kamiguchi *et al.* as modified by Stehr and Rees, with an offset track as taught by Rahn *et al.* in order to allow linear movement and pulley and clutch mechanism as taught by Sharman in order to drive the main drive shaft. This rejection is traversed. Discussion of this rejection shall be made with reference to the claims as amended hereby.

As stated herein, the suggested combination of Kamiguchi *et al.*, Stehr and Rees is improper as the references provide no suggestion for such combination. Further, claims 1 – 5 are believed to be patentably distinct over those references notwithstanding the propriety of the suggested combination. Claim 6 is canceled hereby. As claim 12 depends directly or indirectly from a patentable base claim, it is believed claim 12 is patentable over the combination of references.

With reference to claim 12, Sharman discloses a motor driven press wherein a pulley and clutch mechanism are interposed between the drive motor (19) and main drive shaft (20). Nothing in Sharman teaches or suggests that the clutch be a one-way clutch that drives a mechanism only when the motor rotates in one direction. Nor does Sharman teach or suggest first and second one-way clutches operatively coupled with the motor so that one mechanism of the press is operated only when the motor rotates in one direction and a second mechanism of the press is operated only when the motor rotates in the opposite direction. In contrast to the pulley and clutch of Sharman, claim 12 requires first and second one-way clutches to selectively operate the ejector drive system and a second drive system according to the direction of rotation of the motor. Hence, claim 12 is patentably distinct over the combination of Sharman with Kamiguchi *et al.*, Stehr, Rees and Rahn *et al.* irrespective of the propriety of the suggested combination.

Appl. No. 09/980,508
Filed: 2 November 2001
Amendment Page 8 of 9

The Examiner has rejected claims 7, 8 and 11 under 35 USC §103(a) as being unpatentable over Kamiguchi (5736079) in view of Stehr (4735080) and Rees (372665) as applied to claims 1 – 5 and further in view of Stehr (4552525) noting in particular that Kamiguchi *et al.* Stehr and Rees fail to teach a cam member with means for adjusting the relative offset of the cam track and a cam track having a portion that generates a pulsation in the linear movement; the Examiner notes that Stehr ('525) teaches a cam member that has an adjustable means that provide for adjusting the relative offset of the cam track and that the shape of the cam allows for pulsation. The Examiner concluded that it would have been obvious to one of ordinary skill in the art to modify Kamiguchi as modified by Stehr ('080) and Rees, with means for adjusting the relative offset of the cam track and the shape of the cam track varies the substantially circular path of the cam track as taught by Stehr ('525) because it allows for adjustment of the movement of the elements. This rejection is traversed. Discussion of this rejection shall be made with reference to the claims as amended hereby.

As stated herein, the suggested combination of Kamiguchi *et al.*, Stehr and Rees is improper as the references provide no suggestion for such combination. Further, it is submitted that claims 1 – 5 are patentably distinct over those references irrespective of the propriety of the suggested combination. As claims 7, 8 and 11 depend directly or indirectly from those patentable base claims, it is believed claims 7, 8 and 11 are patentable over the combination of references, even assuming the suggested combination is not improper.

With reference to claims 7 and 8, Stehr ('525) discloses a drive mechanism for ejector pins (2) wherein a lever member (5) having a French curve (10) adjustably positioned on the lever member is interposed between a cam (21) and ejector lever member (3). The position of the French curve is adjusted by an adjusting screw (14) and the French curve includes circular/tangential cam sections. Hence, Stehr ('525) interposes a second cam between the cam track of the driven cam and the ejector lever member. In contrast to Stehr ('525), the inventions of claims 7 and 8 provide that the cam member includes a substantially circular cam track and that the cam member be connected with the motor output shaft. Hence, claims 7 and 8 patentably distinguish over the combination of Kamiguchi *et al.*, Stehr ('080), Rees and Stehr ('525) as eliminating the intermediate lever members required by that combination and in particular the second cam track of the lever member intermediate the cam and the ejector lever member.

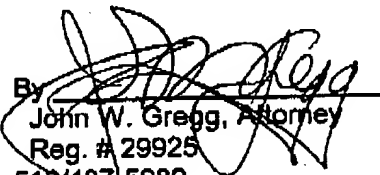
Appl. No. 09/980,508
Filed: 2 November 2001
Amendment Page 9 of 9

With reference to claim 11, Stehr ('525) provides no description whatsoever of pulsation of the linear movement of the ejector pin. Nor do the drawings illustrate any pulsation on the linear movement of the ejector pin. The adjustment contemplated by Stehr ('525) is not described as suitable for producing pulsation of the linear movement, the adjustment limiting the lift of the ejector pins between a minimum and maximum amount as illustrated in Figs. 1 and 2. The Examiner's conclusion concerning pulsation of linear movement of the ejector pin of Stehr ('525) is apparently unsupported by the reference. In contrast to Stehr ('525), claim 11 expressly requires that the cam track include a portion that varies from the substantially circular path to generate a pulsation in the linear movement of the ejector plate. It is submitted that claim 11 patentably distinguishes over the teaching of Stehr ('525).

The Examiner has objected to claims 9 and 10 as being dependent from a rejected base claim. In light of the amendment of claims hereby it is submitted that the base claims are now patentably distinct over the references and that the basis of this objection is overcome.

It is believed that the claims as amended patentably distinguish over the references whether considered singly under 35 USC §102, or in combination under 35 USC§103 and that the application is now in condition for allowance. Reconsideration of the application as amended is respectfully requested and an early notice of allowance is earnestly solicited.

Respectfully Submitted,

By 
John W. Gregg, Attorney
Reg. # 29925
513/487-5980

RECEIVED
CENTRAL FAX CENTER
OCT 14 2003

OFFICIAL